2811

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Shuici Kikuchi et al.
Serial No. : 09/829,876
Filed : April 10, 2001
Title : SEMICONDUCTOR DEVICE AND METHOD OF MANUFACTURING THE SAME

Art Unit : 2811
Examiner : Douglas W. Owens

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12/2/02
Yum.

Commissioner for Patents
Washington, D.C. 20231

RESPONSE

In response to the action mailed August 29, 2002, please amend the application as follows:

In the claims:

Please amend claims 5 to 20 as follows:

-- 5. (Amended) A method of manufacturing a semiconductor device comprising:

implanting an impurity of a first conductive type in a semiconductor substrate of a second conductive type;

providing a first gate insulation film on the semiconductor substrate;

diffusing the implanted impurity in the substrate to form a first drain region partly under the first gate insulation film and a second drain region adjacent to and above the first drain region, said first drain region having a different impurity concentration than the second drain region;

providing a second gate insulation film on the semiconductor substrate except where the first gate insulation film is disposed;

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providing a gate electrode that spans from the first gate insulation film to the second gate insulation film;

providing a source region of the first conductive type disposed proximally to one end of said gate electrode; and

providing a third drain region of the first conductive type disposed distally from the other end of said gate electrode and disposed in said second drain region.

6. (Amended) A method for manufacturing a semiconductor device according to Claim 5, wherein providing said first drain region and second drain region comprises diffusing said impurity from the first gate insulation film.

7. (Amended) A method of manufacturing a semiconductor device according to Claim 5, further comprising:

providing a layer of the first conductive type to span from one end of said first gate insulation film to said third drain region.

8. (Amended) A method of manufacturing a semiconductor device according to Claim 5, further comprising:

forming a layer of the first conductive type having a high impurity concentration at a predetermined depth in said substrate at a region spanning from a predetermined space from one end of said first gate insulation film to said third drain region, and the high impurity concentration being low at a region near surface of the substrate.

9. (Amended) A method of manufacturing a semiconductor device according to Claim 7, wherein phosphorus ion is implanted with an energy of about 100 KeV to 200 KeV in the substrate to form the layer.

10. (Amended) A method of manufacturing a semiconductor device according to Claim 8,